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Homework 2 - APIs

For the second part of Homework 2, I chose to use the "OpenWeatherMap" API in order to call data from this webpage and gather weather information from different cities around the world using the Python programming language. The cities I chose to look up information for are Tokyo, Athens, Venice, Montreal, Paris, Dubai, Barcelona, Cairo, Havana, and Shanghai, and the five pieces of information I chose to extract were its minimum temperatures, maximum temperatures, what the temperature feels like, humidity levels, and the weather description.

In the first block of code, I imported the libraries needed to run my code: requests, json, pandas, and files. In the second block of code, I first set OpenWeatherMap's API key number to "API_key." Then, I included the ten cities that I wanted to gather weather information for into a list called "cities." Next, I created empty lists of the information that I wanted to gather from each city. The city name, descriptions, minimum temperature, maximum temperature, humidity, and what the weather feels like. After creating these empty lists, I created a for loop in order to loop through each city in the "cities" list. Inside the for loop, I first inserted the URL of the API and set that equal to "url." Then, I used the requests library to extract the information from the API and used json to see the result. After finding out where the data I want to extract is listed under with json, I call each of these pieces of information by setting the codes equal to each of their respective names (name, description, min_temp, max_temp, humidity, and feel). Next, I used the print statement to print out each piece of information along with the name of the cities in the list, which is what the output will be based on. Finally, for the last part of the for loop, I appended each piece of information to its corresponding empty list that was made at the beginning of the code block so that the lists outside of the for loop are no longer empty and may be referenced for information at any time. In the third block of code, I created a dataframe for the weather information named "weather_df." In this data frame, I added all of the lists that I just filled in the second block of code into the data frame. Now, the data frame will have a "Names," "Minimum Temperature," "Maximum Temperature," "Feels Like," "Humidity," and "Description" columns. After that, I printed the data frame, which will give me an output of the data frame after running the code. Lastly, I converted the data frame to a csv file named "weather.csv" and downloaded it.

As a result, I was able to gather weather information about ten different cities around the world, print the results as an output, put the results into a data frame, and download the results as a csv file. By using this API program and possibly modifying the city names to their own needs, people from around the world will be able to extract current information about what the weather is like for that day. By doing so, they will be able to dress according to the weather, carry an umbrella if necessary, plan out their day accordingly, and also access what the weather is like in cities other than their own.